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NISTIR 5097

# Metrology for Radio-Frequency Technology, A Bibliography of NIST Publications

Edited by  
Ruth Marie Lyons

September 2000



**NIST**

National Institute of Standards and Technology  
Technology Administration, U.S. Department of Commerce

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# Metrology for Radio-Frequency Technology, A Bibliography of NIST Publications

Edited by  
Ruth Marie Lyons  
*Radio-Frequency Technology Division*  
Electronics and Electrical Engineering Laboratory

August 2000



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National Institute of Standards and Technology  
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# **METROLOGY FOR RADIO-FREQUENCY TECHNOLOGY**

## **A BIBLIOGRAPHY OF NIST PUBLICATIONS**

Edited by  
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Boulder, CO 80303

This bibliography lists the publications by the staff of the Electromagnetic Fields Division of the National Institute of Standards and Technology for the period January 1970 through July 2000. It supersedes NISTIR 5084, which listed the publications of the Electromagnetic Fields Division from January 1970 through July 1999. Selected earlier publications from the Division's predecessor organizations are included.

Key words: antennas; dielectric measurements; electromagnetic interference; microwave metrology; microwave power, impedance, attenuation; near-field antenna measurements; noise; nonionizing radiation; radiation hazards; remote sensing; standards; time domain; waveform metrology.

### **INTRODUCTION**

The Radio-Frequency Technology Division was established in 1998 as a result of a programmatic restructuring of the former Electromagnetic Fields Division. The new name more accurately reflects the Division's current technical programs and characterizes its broad mission. Programs include metrology for fundamental microwave quantities such as power, noise, impedance, and scattering parameters; standards and metrology for wireless systems; gain, pattern, and polarization measurements for antennas; electromagnetic properties of materials; measurements for high-speed microelectronics; electromagnetic field characterization and electromagnetic compatibility.

All known work published by the Division staff from January 1970 through July 1999 is included. Work performed by authors before joining this Division or work by authors who have left this Division has been included only when it had special significance. A miscellaneous category includes general publications. A few references are listed in more than one category where appropriate.

Several other information sources may be useful to the reader who is interested in NIST activities connected with electromagnetic metrology. Two companion bibliographies, NISTIR 5098 and NISTIR 5099, list publications of the Electromagnetic Technology Division and the Optoelectronics Division for the same period. Topics in these companion publications include metrology for laser systems,

optical fibers, optical communication equipment, cryoelectronics, superconductors, and other unusual electrical engineering materials. An excellent summary of the whole field of electromagnetic metrology as it stood in 1967 was published as a special issue of the Proceedings of the IEEE (volume 55, June 1967). Advances in the following decades were described in two other special issues of the same journal (volume 66, April 1978 and volume 74, January 1986).

#### A Note on Abbreviations

On August 23, 1988, the National Bureau of Standards (NBS) became the National Institute of Standards and Technology (NIST); therefore, documents with either prefix are considered NIST publications. Most readers are familiar with the commonly used abbreviations for the names of the professional journals that appear in this bibliography. Some publication series are peculiar to NIST and may call for explanation. They are:

NISTIR - NIST Interagency/Internal Report	NBSIR - NBS Interagency/Internal Report
NIST TN - NIST Technical Note	NBS TN - NBS Technical Note
NIST SP - NIST Special Publication	NBS SP - NBS Special Publication
NIST HB - NIST Handbook	NBS HB - NBS Handbook
NIST JRES - NIST Journal of Research	NBS JRES - NBS Journal of Research
NIST MN - NIST Monograph	NBS MN - NBS Monograph

#### Purchase Procedures and Document Availability

NIST (NBS) Technical Notes, Special Publications, Handbooks, Journals of Research, and Monographs may be purchased from the U.S. Government Printing Office (GPO). The GPO website is <http://www.access.gpo.gov/> and the order desk phone number is 202-512-1800. For a GPO bookstore near you, use the following website address: [http://www.access.gpo.gov/su\\_docs/sale/abkst001.html](http://www.access.gpo.gov/su_docs/sale/abkst001.html). The Government Printing Office usually stocks these publications for only a year or two, after which they may be purchased from the National Technical Information Service, whose website for information and ordering is at <http://www.ntis.gov/>. The phone number for ordering is 703-487-4650.

Reprints of papers published in non-NIST media may be available in limited quantities from the authors.



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